Sanset Area 2, Sanset FLL



MEMORANDUM **CH2MHILL**

# Sauget Area 2 Superfund Site
# Site R Soil/Bentonite Cutoff Wall
# Summary of Observations and Recommendations, March 24, 2004

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DATE: March 24, 2004

## Purpose and Scope

This memorandum summarizes our observations and recommendations arising from a site visit and meeting at the Sauget Site on March 23, 2004. The purpose of the site visit and meeting was to identify an appropriate path forward for continuation of the Soil/Bentonite Cutoff Wall (SBCW) construction at Site R of the Sauget Area 2 Superfund Site.

The site meeting included representatives of CH2M HILL, EPA, IEPA, Solutia, Monsanto, URS, and Inquip. The principal topic of discussion was what further preparation needed to be performed before trench backfill placement could recommence.

At the conclusion of the meeting, we viewed several samples of materials excavated from the trench bottom, and observed the construction activities from outside of the exclusion zone. After a break for lunch, CH2M HILL, EPA, and IEPA staff returned to the site to observe the trench bottom cleaning operations in progress.

## Current SBCW Conditions

Work on the SBCW was halted on January 23, 2004. Work was resumed on March 9, 2004. Measurements taken using a weighted line on March 8 suggested that material other than backfill accumulated on the top of the backfill slope while operations were suspended.

When the trench operations were restarted, the trench bottom was "sounded" for its full length to identify the top of backfill using the hydraulic clamshell. It is our understanding that the clamshell (weight about 15 tons) was lowered with the clam jaws open until the operator felt resistance. At that point, the clam was closed and brought to the surface. The material in the clam was examined, and if it was not backfill, the process was repeated until backfill was brought up. This procedure was repeated about every 12 feet. The process was started at the top of the backfill slope (north) and moved southward toward the bottom of the backfill slope. This procedure extended form March 9 to March 16.

Sounding with a weighted line on March 16 indicated that, after completion of the above procedure, some material other than backfill still remained on top of the backfill, mostly at locations south of about Station 17+80. The origin of this material is uncertain, but it

appears to be composed of a mixture of bentonite, water, and fine sand (referred to hereinafter as "sand/bentonite mixture"). The unit weight of several samples of this material is on the order of 100 pcf as determined by a mud balance. The backfill unit weight tends to be on the order of 120 pcf.

A more detailed summary of the measurement procedures and dates and other project re-starting activities was handed out and reviewed at the meeting by Richard Williams, Solutia.

After discussions of the trench bottom profile in teleconferences on Friday (March 19) and Monday (March 22) the clamshell was used starting on March 22 to clean the trench bottom near Station 12+40, the approximate toe of the backfill slope. Soundings taken on Tuesday morning (March 23) indicated that some of the sand/bentonite mixture had moved toward the point of excavation a limited distance, on the order of 40 feet. After the Tuesday soundings, the clamshell excavation was slowly moved northward up the slope of the backfill, removing the sand/bentonite mixture. Soundings taken Wednesday morning (March 24) indicated that a somewhat flatter slope was developing in the sand/bentonite mixture uphill of the excavation, suggesting that it was moving toward the point of excavation.

## Path Forward

At the meeting, it was agreed that the excavation/cleaning performed this week appeared to be effective and would be continued continuously to Station 17+80 as follows:

- The clamshell rig will be used to clean the bottom of the trench south of Station 17+80 in two passes: first northward (up the backfill slope), then southward (down the backfill slope).
- At each excavation point, the bottom will first be sounded with the weighted line to estimate the depth to the top of the sand/bentonite mixture. The depth indicator in the clamshell crane will be used to avoid dropping the clamshell through and excessively displacing the sand/bentonite mixture. The bottom will be cleaned with the clamshell until previously placed backfill is brought up. The clamshell rig will then move northward the width of the clamshell and the process will be repeated.
- When the cleaning operation reaches Station 17+80, it will be reversed and travel back down the slope (southward) to remove any sand/bentonite displaced downslope or otherwise missed during the first (northward) cleaning pass, as well as to remove any slough or other material.
- Trench profiling will be performed at least once per day during the cleaning operations, and the results will be furnished daily to all parties for review.

Backfilling operations can be started once the northward pass is completed and the southward pass begins, but only after EPA reviews and approves the observations and the trench bottom profiles.

## Observation of Cleaning Operations

The cleaning operations were observed for a short period on the afternoon of March 24. It appeared that the clamshell was effective in bringing up the sand/bentonite mixture from the trench bottom. The sand/bentonite mixture was not liquid, but was very plastic. The texture of the backfill is somewhat more blocky. It appeared that significant progress was being made, although we did not observe the actual station location of the clamshell rig.

## Recommendations

1. The agreed-upon trench bottom cleaning procedure should be completed as discussed.
2. Trench backfilling should not proceed until EPA agrees that the trench bottom has cleaned of excess sand/backfill mixture. Trench backfilling can proceed once the initial (northward) cleaning pass is completed and EPA approves the cleaning.
3. Once trench backfilling resumes, backfill placement should be limited to a rate that will not cause backfill to enter the portion of the trench bottom being cleaned on the southward pass. The toe of the advancing backfill should not advance into an area of the trench bottom being cleaned until soundings can be performed to verify that cleaning is complete and EPA or its designee has accepted the cleaning.
4. Depth profiling should be performed in accordance with the specification requirements once the cleaning is entirely complete and the newly placed backfill has reached the bottom of the trench.

Please call if you have any questions or need additional information.